

3.2 Using Parallel Lines and Transversals

Questions:

- Name a pair of corresponding angles. _____
a. What is the relationship between their measurements? \cong
- Name a pair of alternate interior angles. _____
a. What is the relationship between their measurements? \cong
- Name a pair of same-side interior (consecutive) angles. _____
a. What is the relationship between their measurements? suppl.
- Name a pair of alternate exterior angles. _____
a. What is the relationship between their measurements? \cong

Oct 22-10:03 AM

Conclusions:

Postulate 15 Corresponding Angles Postulate

If two parallel lines are cut by a transversal, then each pair of corresponding angles is \cong .

Theorem 3.1 Alternate Interior Angles Theorem

If two parallel lines are cut by a transversal, then each pair of alternate interior angles is \cong .

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Theorem 3.2 Alternate Exterior Angles Theorem

If two parallel lines are cut by a transversal, then each pair of alternate exterior angles is \cong .

Theorem 3.3 Consecutive Interior Angles Theorem

If two parallel lines are cut by a transversal, then each pair of same-side (consecutive) interior angles is supplementary.

Let's prove Theorem 3.3

Given: $l \parallel m$

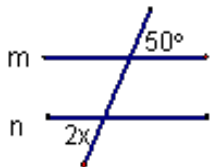
Prove: $\angle 3$ and $\angle 5$ are supplementary

$S.$ ① $l \parallel m$ ② $\angle 3 + \angle 4$ are LP ③ $\angle 3 + \angle 4$ are suppl. ④ $\angle 4 \cong \angle 5$ ⑤ $m\angle 3 + m\angle 4 = 180$ ⑥ $m\angle 4 = m\angle 5$ ⑦ $m\angle 3 + m\angle 5 = 180$ ⑧ $\angle 3 + \angle 5$ are suppl.	$R.$ ① Given ② def of LP ③ LPP ④ Alt. Int. \angle s thm ⑤ def of suppl. ⑥ def of \cong ⑦ Subst ⑧ def of suppl.
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Solve for x and/or y.

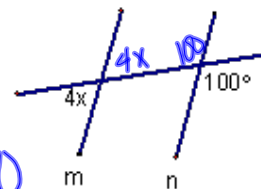
 $m \parallel n$ 

$$2x = 50$$

$$x = 25$$

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Solve for x and/or y.

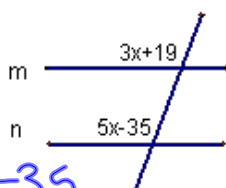
 $m \parallel n$ 

$$4x + 100 = 180$$

$$x = 20$$

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Solve for x and/or y.

 $m \parallel n$ 

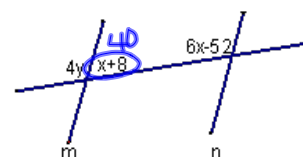
$$3x+19 = 5x-35$$

$$54 = 2x$$

$$27 = x$$

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Solve for x and/or y.

 $m \parallel n$ 

$$4y + 6x - 52 = 180$$

$$7x = 224$$

$$x = 32$$

$$4y = 140$$

$$y = 35$$

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Find the $m\angle ABC$

$m \parallel n$

$x + 130 = 180$
 $x = 50$
 $y + 160 = 180$
 $y = 20$
 $m\angle ABC = 50 + 20$
 70°

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Solve for x and/or y.

$y = 70$
 $x = 180 - 100$
 $x = 80$

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Solve for x and/or y.

$4x - 2y = 64$
 $3x + 5y + 3 + 64 = 180$
 $x = 21$
 $y = 10$

Oct 22-1:09 PM

HW

p.158 #s 27-32, 35, 36

Oct 22-1:11 PM